

Revision of the Oriental Genus *Loeblites* Franz (Coleoptera, Scydmaenidae)

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Revision of the Oriental genus *Loeblites* Franz (Coleoptera, Scydmaenidae). - The Oriental scydmaenid beetle genus *Loeblites* Franz is revised. *Loeblites mastigicornis* Franz from Thailand and *L. sabahensis* Franz from Borneo are redescribed, and a new species, *L. minor* sp. n. from Borneo is described. The general morphology of the genus is described and illustrated in details, including mouthparts, wings, female and male genitalia, and an identification key to the species of *Loeblites* is given.

Keywords: Coleoptera - Scydmaenidae - *Loeblites* - revision - morphology - new species - Oriental region - taxonomy.

INTRODUCTION

The genus *Loeblites* (Scydmaeninae, Cyrtoscydmini) was established by Franz (1986) for a single species, *L. mastigicornis*, on the basis of four individuals collected in Thailand. A few years later *L. sabahensis* was described by the same author from Borneo (Franz, 1992). These two species were the only members of the genus known so far. As mentioned previously (Jałoszyński, 2004), *Loeblites* shows a high degree of similarity to *Syndicus* Franz and *Horaemorphus* Schaufuss; the three genera may form a monophyletic group within the Cyrtoscydmini. Details of morphology have been described only in *Syndicus* (Jałoszyński, 2004); therefore, a comprehensive comparison of all three genera will be possible when respective structures have been described in *Horaemorphus* (Jałoszyński, in preparation). The purpose of the present paper is to provide a clear diagnosis of *Loeblites* and a detailed description of the morphology. Existing descriptions of the two known species lack important details (e.g., spermathecae, mouthparts, thoracic morphology), and during the present study I discovered that the type series of *L. sabahensis* consisted of two different taxa. Therefore, herein *L. mastigicornis* and *L. sabahensis* are redescribed, the detailed morphology of the genus is given (including previously unknown characters), and a new species, *L. minor* sp. n., from Borneo is described.

METHODS

Illustrated anatomical structures were disarticulated, dehydrated in isopropanol, transferred to xylene, and mounted in Canada balsam, or dehydrated in ethanol and mounted in euparal. The measurements are as follows: length of the head is from the

occipital constriction to the anterior margin of clypeus; width maximum includes eyes; length of pronotum is measured along midline; length of elytra is measured along suture; width of elytra combined, measured at greatest width; elytral index (EI): length/width. Mounted specimens often have head and pronotum bent ventrally to a various extent, and therefore a total length measured in dorsal view might be misleading; for this reason the total length given in descriptions is the sum of individual measurements of the head, pronotum and elytra. The length of spermatheca is the longest measurement of the capsular part. The nomenclature of morphological details follows that used in Jałoszyński, 2004, which was partly adopted from O'Keefe & Monteith (2000), Bordoni & Castellini (1973), and Nomura (1991). Studied specimens are deposited in Muséum d'histoire naturelle, Geneva, Switzerland (MHNG), Natural History Museum, Vienna, Austria (NMW), private collection of the author, Poznań, Poland (PCPJ), and private collection of Peter Hlaváč, Košice, Slovakia (PCPH).

TAXONOMY

Loeblites Franz

Loeblites Franz, 1986: 965. Type species: *Loeblites mastigicornis* Franz, 1986 (des. orig.); Newton & Franz, 1998: 147.

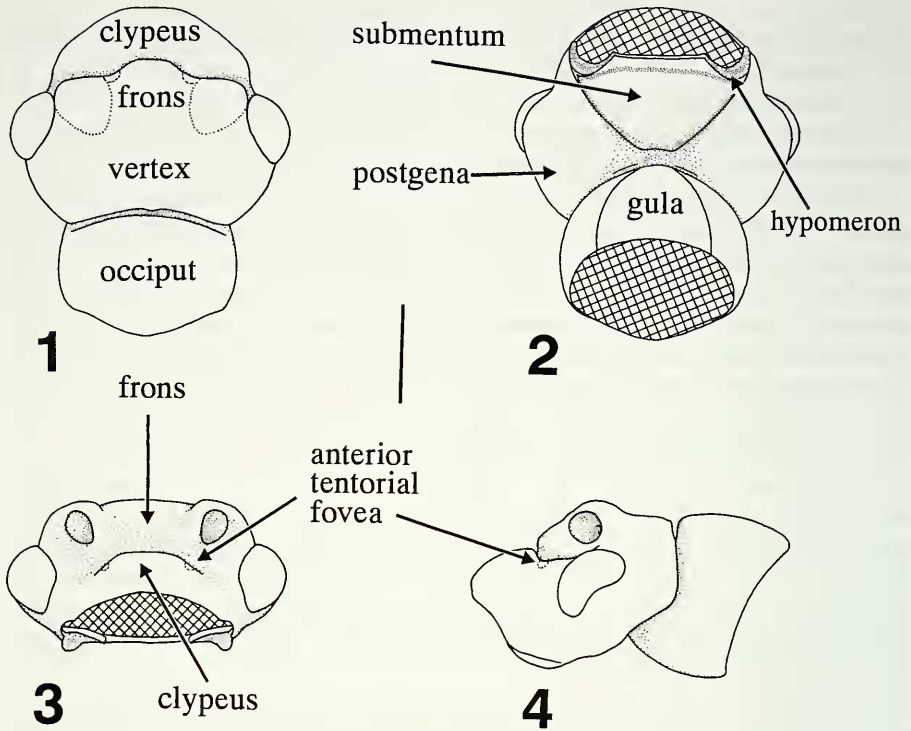
Diagnosis. Members of *Loeblites* can be identified on the basis of the following characters: body of moderate size (2.31-2.82 mm), relatively slender, very convex, light to dark brown, covered with moderately dense and long setation; head wider than long, widest at eyes; mandibles nearly planar, subtriangular with long prosthema, slender and sharp apical tooth and subapical tooth; maxillary palpi with broadened, elongate palpomere III and fusiform, slender palpomere IV; antenna without club, very long and slender, barely broadened toward apex, antennomere XI not modified, well separated from X; pronotum widest near anterior $1/5$ - $1/3$, with rounded anterior margin and sides, lateral margins distinctly narrowing posteriorly, without lateral carina or sharp edge, with constriction separating short posterior collar, in dorsal view posterior collar demarcated from disc by transverse row of four pits, each side of pronotum bears two additional, shallow and indistinctly delimited pits or impressions; scutellum not visible; elytra entire, oval, each elytron with two basal foveae located very close to elytral insertion, so that pits are partly covered by posterior margin of pronotum, base of elytra usually with shallow internal humeral impressions; all femora with slender basal stalk-like part and strongly clavate distal part with narrow dorsal femoral groove and very small circular or oval pore, presumably a gland opening. Aedeagus symmetrical or with minimally asymmetrical internal armature, elongate, with long, aetose parameres and relatively complicated, darkly sclerotized internal sac; spermatheca well sclerotized, usually dark brown, ovoid with tubular or funnel-like excavation and approximate insertions of very thin ductus spermathecae and thicker duct of accessory gland; bursa copulatrix variously developed, in one case missing, in remaining two known species relatively large and dark, asymmetrical to symmetrical.

Redescription. The following detailed description of the general morphology is based on disarticulated male and female specimens of *Loeblites sabahensis* (remarks

on the remaining species are included, if described structures are significantly different). This species was selected because of the abundance of specimens available for dissections.

Head (Figs 1-4, 19). In dorsal view head wider than long, widest at eyes; occiput broad, only slightly narrower than vertex, distinctly separated from vertex by constriction and relatively deep transverse groove, tempora long, rounded; vertex about 2.5 times as wide as long, slightly convex, with small and indistinctly delimited median tubercle adjacent to occipital constriction; supraantennal tubercles relatively large and strongly raised; frons relatively short, gradually lowering anteriorly, demarcated from clypeus by transverse groove. Punctuation of vertex and frons relatively fine and sparse; setation sparse and moderately long. Clypeus wider than long, with uneven, granulated surface; anterior tentorial foveae barely visible, located in supraclypeal groove, in anterior margin of head; eyes located near middle of head length, convex, relatively large, in lateral view with emarginate postero-ventral margin, finely faceted; gena and postgena strongly convex, with moderately long setae directed laterally and dorsally. In ventral view gula large, subtriangular with rounded lateral margins; submentum subtriangular, with shallow groove parallel to posterior margin of mentum; posterior tentorial pits not visible; hypomera (sensu Jałoszyński, 2004; hypostomae of O'Keefe, 2000) well developed. Antennal cavities broadly separated, located in latero-anterior part of head, under supraantennal tubercles; antenna (Figs 36-38) without club, very long, antennomeres with well delimited basal rings, covered with long, moderately dense, suberect to erect setae.

Mouthparts (Figs 5-8). Labrum (Fig. 5) wider than long, subtrapezoidal, with straight posterior margin, rounded sides and minimally concave anterior margin; lateral and anterior margins with narrow, lightly sclerotized velum. Dorsal surface of labrum with seven pairs of symmetrically located setae of various lengths. Mandible (Fig. 6) subtriangular, nearly planar, with broad base and curved, sharp apical tooth and single subapical tooth. External margin of mandible near posterior condyle bears group of several setae. Prosthema well developed, relatively broad, composed of short setae nearly from base of mandible to about middle of internal margin, which between prosthema and subapical tooth is sharp and irregularly, very finely serrated. Maxilla (Fig. 7) with subtriangular stipes bearing two basal setae; elongate palpifer with two long subapical setae and three or four short setae on ventral surface; elongate galea with row of long and dense setae along internal apical margin and additionally two shorter and thinner setae on apex and on external margin; and long lacinia with dense and long setae along internal margin and two additional thinner sensory setae near middle of internal margin. Palpus maxillaris relatively large, palpomere I very small, subtrapezoidal, with single subapical seta; II elongate and curved, pipe-like, with slender basal part, gradually broadening toward truncate apex, covered with relatively sparse, suberect setae confined to distal $2/3$; palpomere III distinctly enlarged, with narrow base, broadened between middle and distal third, then narrowing toward truncate apex, with moderately dense, suberect setation; palpomere IV small and long, narrowing from base to pointed apex, setation relatively short and dense, recumbent to suberect, apical third to fourth asetose. Labium (Fig. 8) with darkly sclerotized, subrectangular mentum with numerous tiny pores on ventral surface; palpomere I about

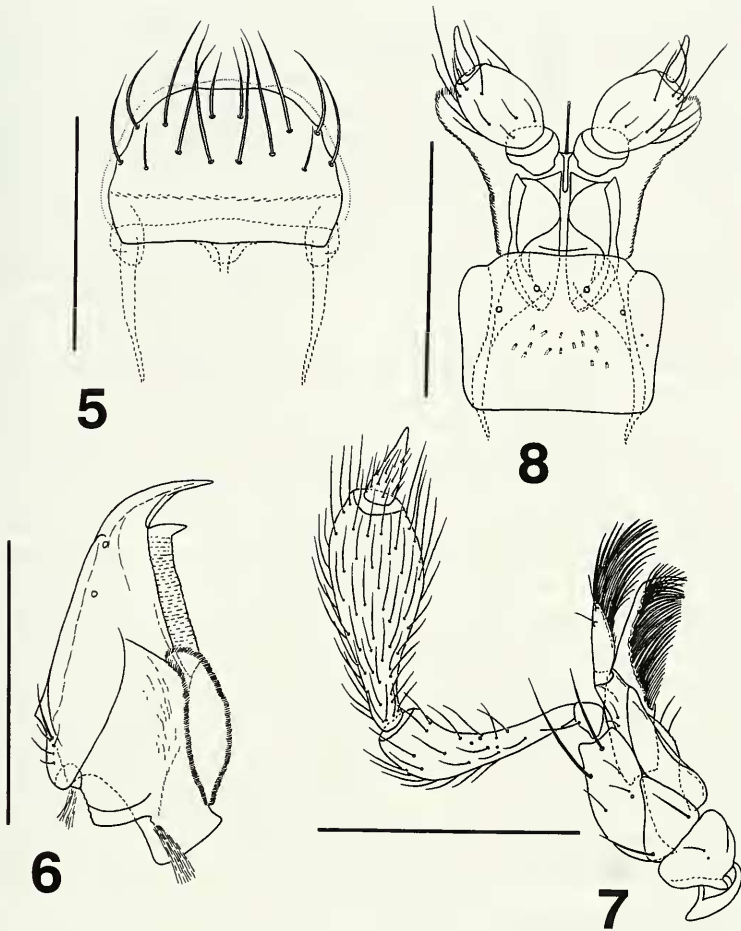


FIGS 1-4

Loeblietes sabahensis Franz: 1 – head, dorsal view, 2 – head, ventral view, 3 – head, anterior view, 4 – head, left lateral view. Scale 0.2 mm.

twice as wide as long, broadened in distal half, asetose; palpomere II large, subcylindrical with rounded sides, nearly three times longer than I, with several long setae; palpomere III long and slender, slightly more than half length of II, narrowing toward pointed apex, asetose. Anterior margin of labium between insertions of palpi bears pair of long bristles in middle; hypostom well developed, with short and dense setation.

Prothorax (Figs 9-10, 19). In dorsal view (Fig. 19), pronotum elongate, anterior margin rounded, lateral margins without sharp edges or carinae, rounded, posterior margin arcuate, hind angles indistinct. Pronotum widest near anterior third or fourth; posterior third or less demarcated by transverse row of eight variously developed foveae. In strictly dorsal view, four foveae fully visible and additional pair of lateral foveae partly visible; external, very shallow pits or rather impressions located laterally, visible only in lateral view (Fig. 10). Dorsal surface of pronotum moderately or strongly convex, except for posterior collar, which is flatter than disc. Dorsal surface covered with very dense, round granules (*L. mastigicornis*) or distinct, but relatively small and sparse punctures (*L. sabahensis* and *L. minor*); setation moderately dense, composed of curved, suberect to erect setae. Ventral side of pronotum (Fig. 9) very short, with relatively well developed basisternum; procoxal cavities large, nearly



FIGS 5-8

Loebrites sabahensis Franz: 5 – labrum, dorsal view, 6 – left mandible, dorsal view, 7 – right maxilla, ventral view, 8 – labium, ventral view. Scale 0.2 mm.

circular, procoxal insertions very widely separated; subcoxal foveae small, located close to posterior margin of prosternum, near coxal insertions, in natural position covered by coxae. Hypomera large and well demarcated, elongate, impressed in middle. Ventral surface of pronotum covered with relatively dense, short suberect setation, except for asetose areas under coxae.

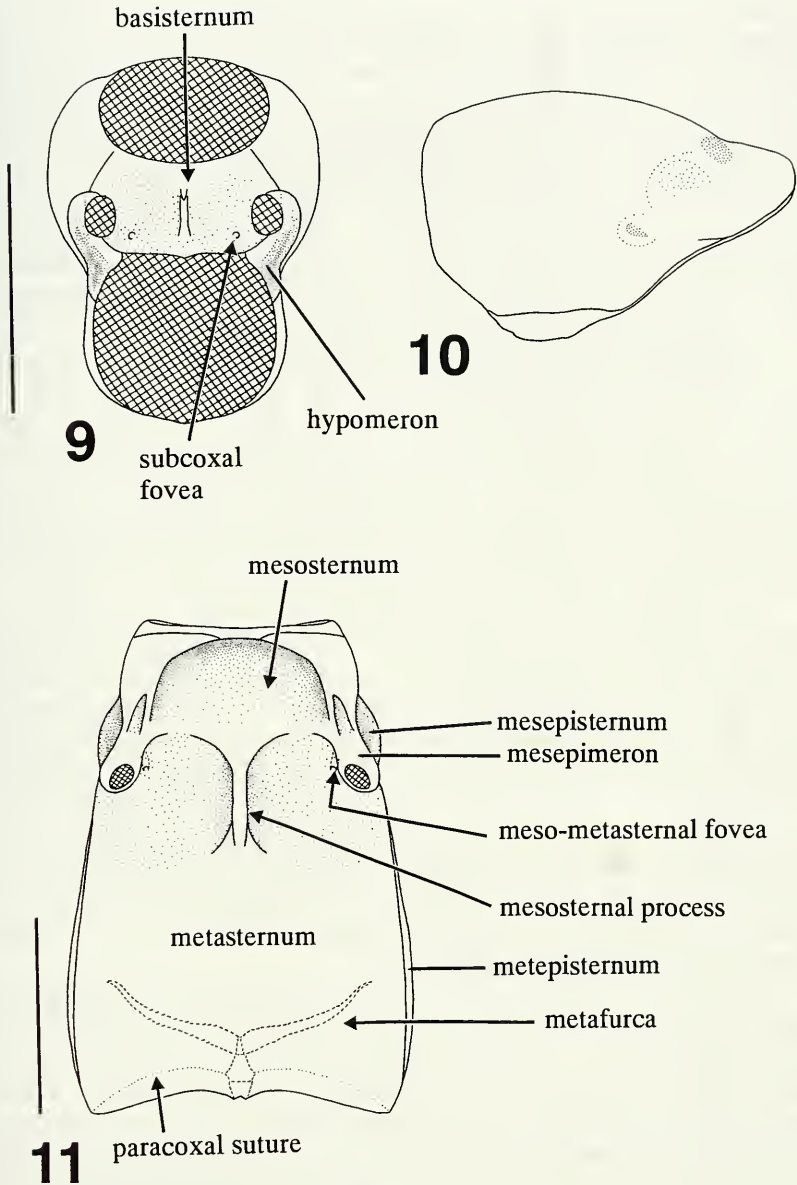
Mesothorax (Figs 11-12). Mesonotum (Fig. 12) elongate; prescutellum relatively short and broad, subtriangular, with slightly concave anterior margin and convex, rounded posterior margin, each lateral margin terminated at short anterior notal wing process; scutellum long and narrow, with rounded apex; postscutellum very short, with deeply emarginate posterior margin; posterior notal wing processes long

and slender, extending latero-posteriorly toward latero-anterior margins of metatergal prescutum. Mesosternum (Fig. 11) wider than long, subtrapezoidal; mesepimeron elongate, with shallow subtriangular impression; mesepisternum elongate, distinctly convex, partly visible in dorsal view; basisternal area large, broadly and deeply impressed in middle, posteriorly basisternum expanded in middle into raised, moderately narrow mesosternal process extending to about anterior third of metasternum, gradually raising to posterior $1/4$ - $1/5$, then lowering toward rounded apex. Coxal insertions small, oval, very broadly separated. Surface of basisternal area uneven, densely covered with long setae; convex parts of mesepimera glabrous and asetose, glossy, concave area on each mesepimeron with dense, short setae; mesepisterna covered with short and dense setae.

Metathorax (Figs 11-12). Metanotum (Fig. 12) distinctly wider than long. Prescutum relatively small, transverse, with rounded posterior margin, distinctly demarcated from scutum, laterally connected to wing insertion, postero-laterally to scutum; scutum large, nearly completely divided into two lateral parts by large, triangular scutellum, distinctly separated from scutum and from postnotum by sutures; postnotum relatively small, narrow, with convex, rounded posterior margin. Metasternum (Fig. 11) elongate, basisternal area with biemarginate anterior margin, deeply depressed between mesosternal process and mesocoxal insertions; meso-metasternal foveae (metasternal foveae in Jałoszyński, 2004; the foveae are actually located between meso- and metasternum) small, in natural position covered by mesocoxae; middle part of anterior margin fused to mesosternal process; posterior $2/3$ or more of metasternum convex; posterior margin biemarginate, slightly expanded posteriorly in middle, with relatively shallow median notch. Paracoxal sutures indistinct in dry-mounted specimens, well recognizable in transparent mounts; metasternum bordered on each side by narrow episternum. Setation of metasternum relatively long, moderately dense, suberect, except for asetose areas under mesocoxae. Metafurca with short and broad basal stalk and two long, slender, recurved and widely divergent furcal arms.

Elytra (Figs 12, 19) entire, oval, convex, widest anterior to middle, base nearly straight or slightly concave, wider than base of pronotum; humeral callus moderately distinct, internally delimited by relatively short and shallow internal humeral impression; each elytron bears pair of small circular basal foveae connected by U-shaped groove and located in depression between convex discal part and small basal lobe connected to mesonotum; in natural position foveae barely visible, covered by posterior margin of pronotum. Elytral punctation not ordered in rows, punctures relatively fine and sparse; elytral setation composed of moderately long, suberect to erect setae.

Wing insertion and wing (Figs 12-13). Suralare large, subrectangular with rounded margins; axillary sclerites elongate, the uppermost sclerite large and S-shaped, two remaining sclerites smaller, elongate; subalare moderately large, elongate. Wings (Fig. 13) in all species fully developed, about twice as long as elytra. Wing venation highly reduced, limited to basal half of wing or less; costa highly reduced, very short; subcosta and radius short, distally fused together with anterior margin of wing; posterior venation composed of only two nearly parallel veins, which may represent mediana and cubitus (or fused cubitus + postcubitus). Distal half of wing without traces



FIGS 9-11

Loebrites sabahensis Franz: 9 – pronotum, ventral view, 10 – pronotum, left lateral view, 11 – mesosternum and metasternum, ventral view. Scale 0.5 mm.

of veins, posterior margin bears row of long setae, anterior margin with very short setae, entire wing covered with extremely short, very dense setation.

Legs. Procoxae relatively large, subconical, contiguous; mesocoxae slightly larger than procoxae, oval, separated by mesosternal process; metacoxae narrowly

separated, transverse, elongate, with well delimited internal posterior part adjacent to trochanters. Trochanters small and longer than wide, protrochanters fully separating procoxae from profemora; meso- and metatrochanters not separating meso- and metafemora from coxae. Femora long, clavate, with very slender proximal part (about half length of femur) and abruptly expanded distal part. Dorsal surface of clavate part of femora bears very narrow but distinct dorsal femoral groove and very small circular or oval pore near the widest place of femur. Tibiae relatively slender and long, straight or minimally recurved, pro- and especially mesotibiae in both sexes bear dense patch of golden setae along distal fourth or fifth of internal margin. Tarsi moderately long, relatively thick, tarsomeres I-IV subequal or only slightly decreasing in length, tarsomere V elongate, nearly as long as II-IV together.

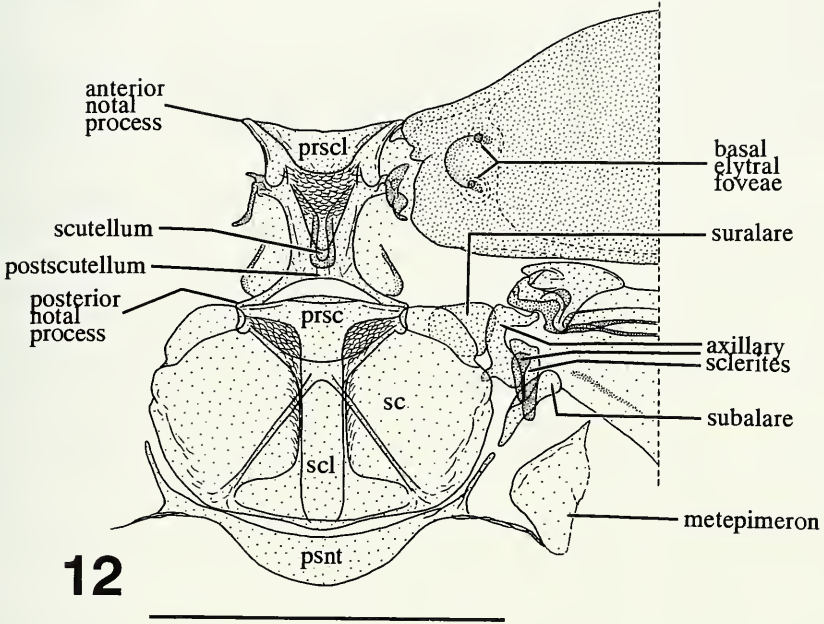
Abdominal sternites. Six abdominal sternites visible (numbered I-VI in the present study), together shorter than metasternum. Sternite I relatively long, but only partly visible from under metacoxae, under coxae concave, with median longitudinal carina not reaching posterior margin of sternite. Sternites II-IV subequal in length, each about as long as half of I; sternite V about as long as 1.5 length of IV, sternite VI subtriangular, with broadly rounded posterior margin, as long as V or slightly longer. Sutures between sternites arcuate or nearly straight; all sternites with variable punctuation and moderately dense, short and slightly suberect setation.

Male genital segment (Figs 14-16) composed of tergite IX, sternite IX and tergite X. Tergite IX (Fig. 14) composed of two elongate lateral parts; sternite IX (Fig. 15) relatively large, subtriangular, with broadly emarginate anterior margin and rounded apex bearing several setae of various lengths, lateral margins convex in proximal part and strongly concave in distal part; tergite X (Fig. 16) small, nearly pentagonal, with anterior margin expanded in middle and posterior margin broadly emarginate.

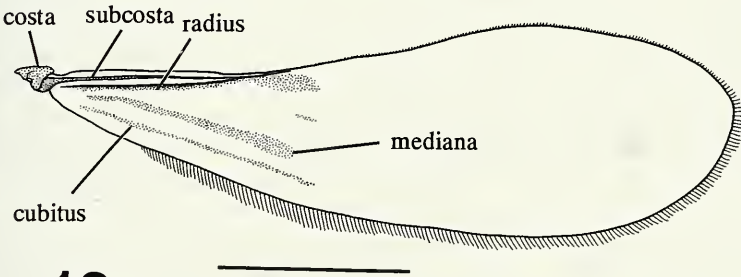
Aedeagus (Figs 20-22, 25-27, 30-32) with large and elongate median lobe widest near base and narrowing toward rounded apex; base with narrow median emargination; parameres long, symmetrical, without apical setae. Armature of internal sac relatively complicated; symmetrical (*L. mastigicornis* and *L. minor*) or slightly to distinctly asymmetrical (*L. sabahensis*).

Female genital segment (Figs 17-18) composed of pair of large, fused paraprocts; pair of moderately broad valvifers fused with paraprocts, with dense setation along apical margin; pair of elongate, slender coxites with sparse and relatively long setae; and small proctiger (Fig. 18) with broadly emarginate proximal margin, with long, slender and pointed median projection in distal margin. Bursa copulatrix (Figs 24, 29, 35) highly diversified within the genus; well developed, darkly sclerotized and symmetrical in *L. mastigicornis* (Fig. 24), relatively lightly sclerotized and asymmetrical in *L. sabahensis* (Fig. 29), and *L. minor* lacks visible structures surrounding distal (i.e. genital) end of ductus spermathecae (Fig. 35).

Spermatheca (Figs 23, 28, 34) capsular, well sclerotized, relatively dark, with apical excavation leading into internal tube or funnel; ductus spermathecae very thin, inserted in base of spermatheca, near short and thicker duct of very lightly sclerotized, in most cases barely recognizable accessory gland.



12



13

FIGS 12-13

Loebrites sabahensis Franz: 12 – mesonotum, metanotum, base of right elytron and wing, dorsal view, 13 – right wing, dorsal view. Prscl – prescutellum, prsc – prescutum, sc – scutum, scl – scutellum, psnt – postnotum. Scale 0.5 mm.

KEY TO THE SPECIES OF *LOEBLITES* FRANZ

- 1 Pronotum densely covered with small, round granules *L. mastigicornis* Franz
- Pronotum without granules 2
- 2 Elytral index: males 1.49-1.62, females 1.51-1.56 *L. sabahensis* Franz
- Elytral index: males 1.39-1.47, females 1.44-1.51 *L. minor* sp. n.

Loeblites mastigicornis Franz

Figs 20-24, 36

Loeblites mastigicornis Franz, 1986: 966, figs. 1, 2.

Type material. Holotype male, white printed label "THAILAND: Chiang Mai, Doi Suthep, 1050 m, 5. XI. 1985, Burckhardt-Löbl", white handwritten label "Loeblites mastigicornis m." and printed "det H. Franz", red handwritten label "Holotypus" (MHNG). Paratypes: 2 males, 2 females, same data (MHNG).

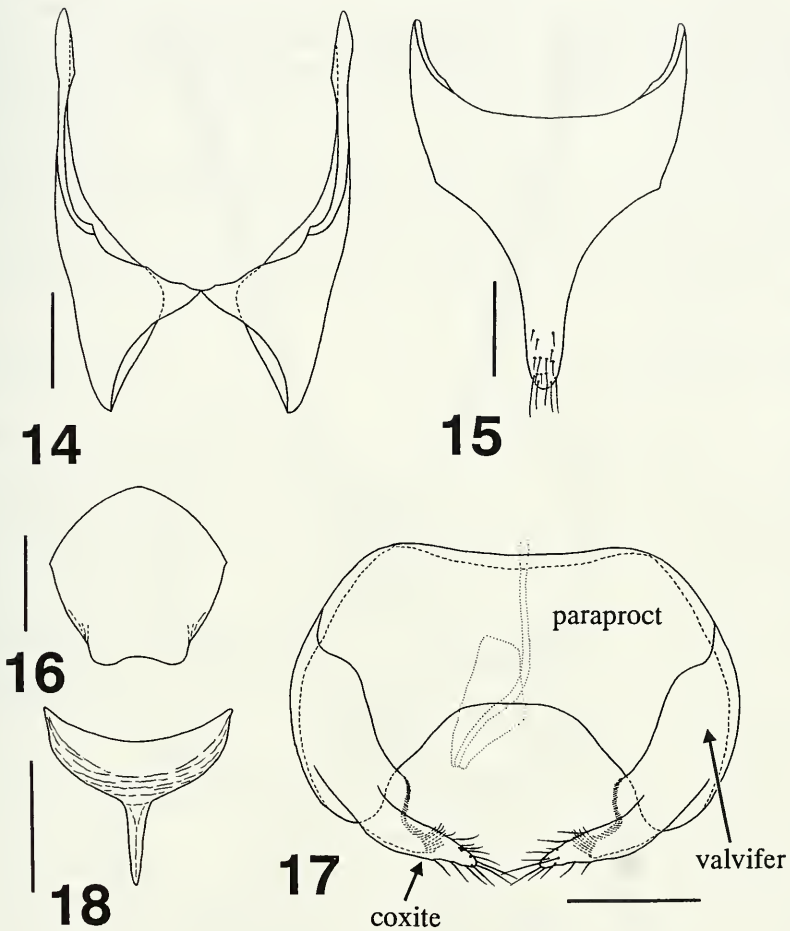
Redescription. Body large, slender, very convex, moderately dark brown, antennae and tibiae slightly lighter, palpi, femora and tarsi distinctly lighter than body; setation relatively sparse, moderately long, suberect, light brown.

Male. Body length 2.77-2.82 mm (mean 2.8 mm). Head broader than long, widest at large, very convex and finely faceted eyes, length 0.45-0.47 mm (mean 0.46 mm), width 0.61-0.62 mm (mean 0.615 mm). Tempora about as long as eye length in dorsal view, rounded, strongly convergent posteriorly; vertex over twice as broad as long, regularly convex, with small and indistinctly delimited median tubercle adjacent to occipital constriction; supraantennal tubercles prominent, distinctly demarcated from frons but indistinctly delimited from vertex; frons relatively small, subtrapezoidal, gradually lowering toward deep clypeal suture; clypeus very large, subtrapezoidal, convex. Vertex posterior to supraantennal tubercles with small, round granules separated by distances about equal to granule diameters; frons with sparse and fine punctures, some with slightly raised margins; clypeus with coarse, small and very dense granules of irregular shape. Setation relatively sparse, setae thin, moderately long, suberect to erect. Antenna (Fig. 36) very slender, length 2.56-2.57 mm (mean 2.565 mm), minimally longer than 0.9 of body length, not thickened toward apex.

Pronotum elongate, widest near anterior fourth, length 0.8-0.81 mm (mean 0.815 mm), maximum width 0.69-0.7 mm (mean 0.695 mm), width at base 0.47-0.5 mm (mean 0.48 mm). Anterior and lateral margins rounded together, sides between middle and posterior third constricted, posterior margin nearly straight, minimally expanded posteriorly in middle; posterior collar demarcated from disc by transverse row of four large but very shallow, elongate pits. Discal part densely covered with small, round, very convex granules about twice as large as those on vertex, distances between granules shorter than their diameters, posterior collar with very coarse and dense granules irregular in shape. Setation moderately sparse, anterior fourth of disc or less with setae as thin as those on head, posteriorly setae increasing in thickness, all setae moderately long, suberect.

Elytra oval, widest at middle or just anterior to middle, length 1.52-1.54 mm (mean 1.53 mm), width 1.0-1.02 mm (mean 1.01 mm), EI 1.51-1.52. Humeral callus on each elytron moderately distinct; internal humeral impression broad and shallow; very narrow adsutural area in anterior $1/4$ - $1/3$ slightly raised and demarcated by sharp edge; apices of elytra separately rounded. Punctuation sparse and fine, punctures shallow and relatively indistinct; setation sparse, moderately long, suberect, setae slightly thinner than those on posterior part of pronotum. Hind wings well developed.

Legs long and slender, all femora with stalk-like basal half and clavate distal half, dorsal femoral groove developed nearly from base of femur up to apex, circular pore very small, located in the highest point of dorsal margin of clavate part; tibiae slender, protibiae minimally recurved, meso- and metatibiae nearly straight; tarsi



FIGS 14-18

Loebrites sabahensis Franz: 14 – tergite IX of male, dorsal view, 15 – sternite IX of male, ventral view, 16 – tergite X, dorsal view, 17 – ovipositor, dorsal view, 18 – proctiger, ventral view. Scale 0.1 mm.

slender, tarsomeres I-IV only slightly reducing in length, tarsomere V as long as III-IV together or minimally longer.

Aedeagus (Fig. 20-22) elongate, subtriangular, widest near base, narrowing toward rounded apex, length 0.66 mm. Base with deep median emargination or notch; parameres long, slender, exceeding apex of median lobe, broadened near apex, without visible setae; internal armature symmetrical, complicated, its most noticeable and darkly sclerotized part is basal complex composed of median capsule surrounded by two pairs of elongate structures, other parts of internal sac are relatively lightly sclerotized.

Female externally indistinguishable from male. Body length 2.74-2.82 mm, length of head 0.45-0.47 mm, width of head 0.62 mm, length of antenna 2.55-2.57 mm, length of pronotum 0.79-0.8 mm, maximum width of pronotum 0.67 mm, width of pronotum at base 0.47-0.5 mm, length of elytra 1.5-1.55 mm, width of elytra 1.0-1.02 mm, EI 1.5-1.52.

Spermatheca as in Fig. 23, length 0.075 mm. Bursa copulatrix (Fig. 24) relatively large, length 0.24 mm, darkly sclerotized, symmetrical, in dorso-ventral view elongate and broadly constricted in distal third.

Comments. *Loeblites mastigicornis* is unique in having pronotum with small, round, very convex granules densely covering disc.

***Loeblites sabahensis* Franz**

Figs 1-19, 30-35, 37

Loeblites sabahensis Franz, 1992: 889, fig. 33.

Type material. Holotype male, white printed label "SABAH: Poring Hot Springs, 500 m, 11. V. 1987, Burckhardt-Löbl", white handwritten label "Loeblites sabahensis m." and printed "det. H. Franz", red handwritten label "Holotypus" (MHNG). Paratypes: 2 males, 1 female, same data except for yellow handwritten identification label with printed "PARATYPUS" (2 in MHNG, 1 in NMW); 2 females, white printed label "SABAH: Kibongol V., 7 km N Tambunan, 700 m, 20. V. 1987, Burckhardt-Löbl" and identification label as above (MHNG); 1 female, white printed label "SABAH: Crocker Ra., 1270 m, km 60 rte Kota Kinabalu-Tambunan, 17. V. 87, Burckhardt-Löbl" and standard yellow identification label (MHNG); 1 female, white printed label "BORNEO Sabah Mt Kinabalu N.P. Por. H.S., area Kipungit Crk. 2, 490 m, 14. VIII. 1988, A Smetana (B112)", and standard yellow identification label (NMW).

Additional material studied. 5 males, 6 females, Borneo, Sabah, Batu Punggul resort, 24.-26. vi. 1988, Kodada & Ciampur leg. (PCPH, PCPJ); 1 male, Borneo, Sabah, Crocker Range, Gunung Emas, 1600 m, 31. v. 2001. Kodada & Ciampur leg. (PCPH).

Redescription. Body moderately large, slender, very convex, moderately dark brown, antenna slightly lighter, palpi and legs distinctly lighter than body; overall setation moderately sparse and long, suberect, light brown.

Male (Fig. 19). Body length 2.42-2.59 mm (mean 2.49 mm). Head (Figs. 1-4) very similar to that of *L. mastigicornis*, length 0.42 mm, width 0.55-0.57 mm (mean 0.56 mm), covered with sparse, small punctures with well delimited margins and sparse, moderately long, very thin setae. Antenna slightly less than 0.9 of body length, length 2.1-2.25 mm (mean 2.19 mm), as in Fig. 37.

Pronotum (Figs 9-10) elongate, widest near anterior fourth, length 0.7-0.75 mm (mean 0.72 mm), maximum width 0.57-0.62 mm (mean 0.60 mm), width at base 0.41-0.45 mm (mean 0.43 mm). Lateral and anterior margins rounded and separated by slightly indistinct angle; posterior margin arcuate, minimally expanded posteriorly in middle; sides strongly constricted between middle and posterior half; posterior collar demarcated from disc by transverse row of four large, deep, slightly elongate pits. Punctuation sparse, composed of fine punctures with sharply delimited and slightly raised margins, sides of posterior collar with moderately coarse granulation; setation as that in *L. mastigicornis*.

Elytra as in *L. mastigicornis*, length 1.3-1.42 mm (mean 1.35 mm), width 0.8-0.95 mm (mean 0.87 mm), EI 1.49-1.62, punctuation fine and sparse; setation moderately long, suberect, setae minimally increasing in thickness from base to middle of each elytron. Hind wings well developed.

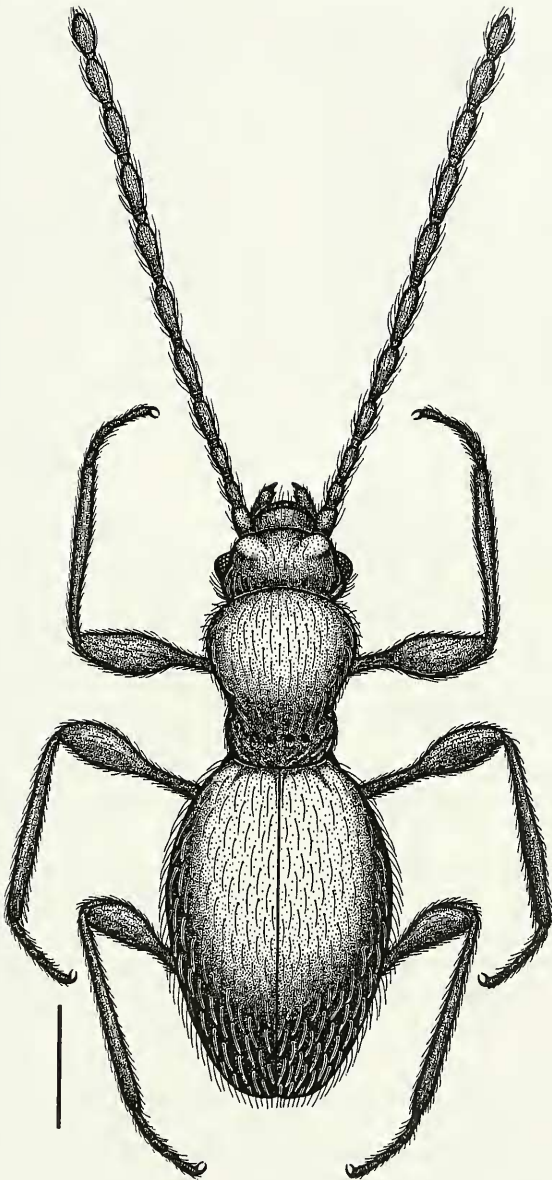
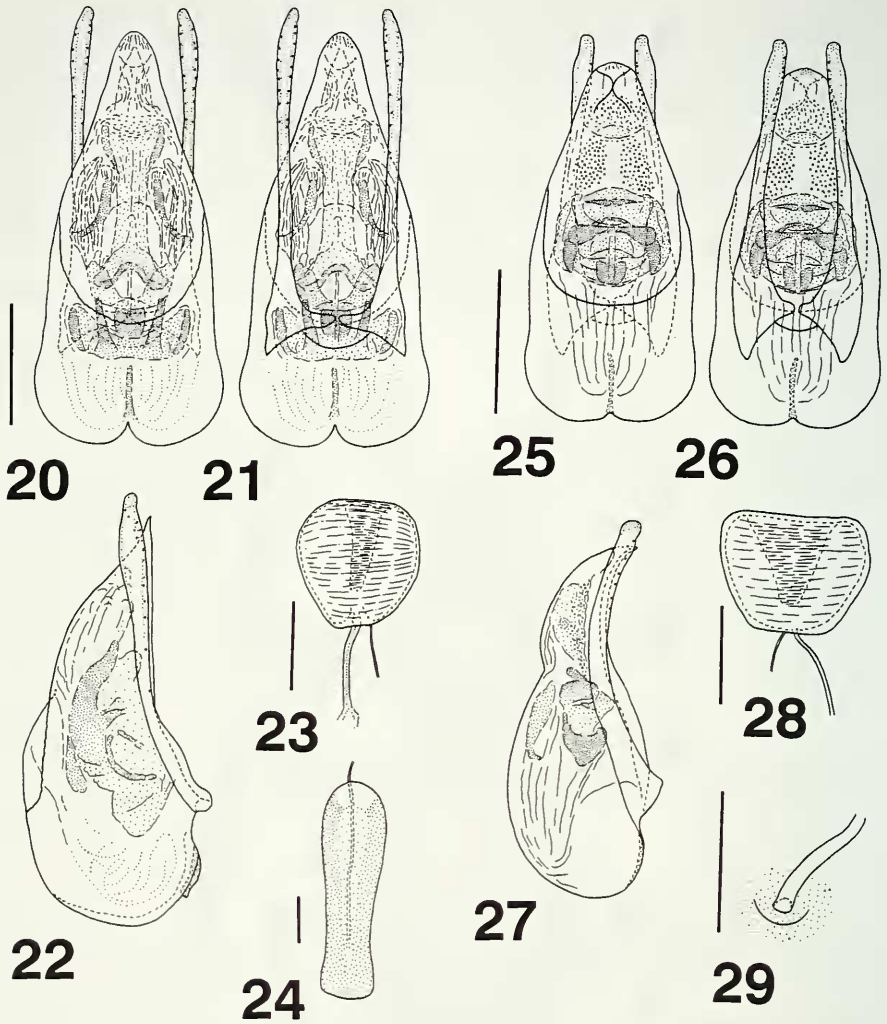


FIG. 19

Loebrites sabahensis Franz, dorsal habitus of male. Scale 0.5 mm.

Legs as in *L. mastigicornis*, except for protibiae, which are nearly straight, not recurved.

Aedeagus (Figs 30-33) elongate, widest near base, narrowing toward rounded apex, length 0.6 mm. Base with moderately deep median emargination; parameres



Figs 20-29

Loeblietes mastigicornis Franz (20-24) and *L. minor* sp. n. (25-29): 20, 25 – aedeagus, dorsal view, 21, 26 – aedeagus, ventral view, 22, 27 – aedeagus, lateral view, 23, 28 – spermatheca, 24, 29 – bursa copulatrix, ventral view. Scale 0.2 mm for 20-22 and 25-27, 0.05 mm for 23-24, 28, 29.

long, slender, exceeding apex of median lobe, broadened near apex, without visible setae; internal armature in most type specimens distinctly asymmetrical, in non-type males inner sac variable, from nearly symmetrical as in Fig. 33 to strongly asymmetrical. The most noticeable part of inner armature is median complex composed of dark central arcuate structure (capsule?) surrounded by relatively lightly pigmented lateral lobes bearing numerous tiny denticles in basal part.

Female very similar to male but slightly longer. Body length 2.59-2.68 mm (mean 2.64 mm), length of head 0.45-0.46 mm (mean 0.455 mm), width of head 0.56-0.59 mm (mean 0.57 mm), length of antenna 2.12-2.25 mm (mean 2.19 mm), length of pronotum 0.72-0.75 mm (mean 0.74 mm), maximum width of pronotum 0.57-0.65 mm (mean 0.61 mm), width of pronotum at base 0.42-0.45 mm (mean 0.43 mm), length of elytra 1.42-1.47 mm (mean 1.45 mm), width of elytra 0.91-0.97 mm (mean 0.94 mm), EI 1.51-1.56.

Spermatheca as in Fig. 34, length 0.08 mm. Bursa copulatrix (Fig. 35) moderately darkly sclerotized, asymmetrical, subconical and slightly curved, length 0.12 mm.

Comments. This species can be identified on the basis of lack of granulation on pronotum and moderately large body. Comparison of the elytral index, the shape of aedeagus or spermatheca and especially the bursa copulatrix is necessary to distinguish *L. sabahensis* from *S. minor*. The latter taxon has not been recognized by Franz and was included into the type series of *L. sabahensis*.

Loeblites minor sp. n.

Figs 25-29, 38

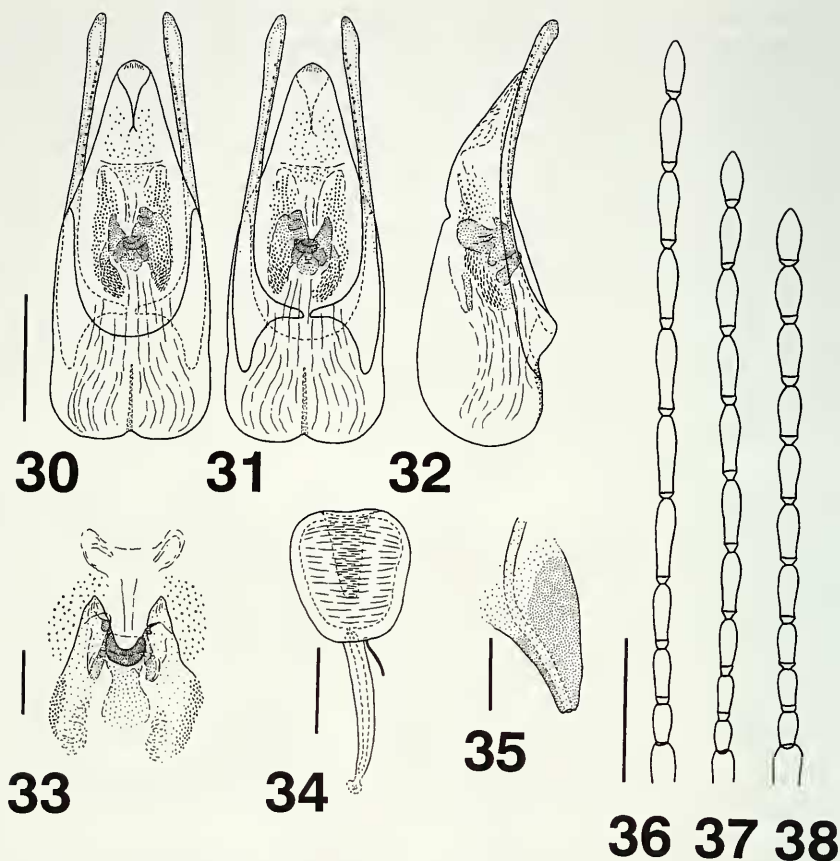
Type material. Holotype male, white printed label "Malaysia, Sabah, Batu Punggul Resort env., 24. VI.-1. VII. 1996, 11c, vegetation debris and forest floor litter accumulated around large trees near river", red printed label "*LOEBLITES minor* m., det. P. Jałoszyński, 2004" (MHNG). Paratypes (all misidentified and bearing yellow identification labels with handwritten "*Loeblites sabahensis* m." and printed "PARATYPUS", labeled by H. Franz): 1 male, 1 female, white printed label "SABAH: Poring Hot Springs, 500 m, 7. V. 1987, Burckhardt-Löbl" (MHNG); 1 male, 2 females, white printed label "SABAH, # 15a, Poring Hot Springs, 500 m, 7. V. 1987, Burckhardt-Löbl" (2 in NMW, 1 in MHNG); all paratypes have been labeled during the present study with yellow, printed labels "*LOEBLITES minor* m., det. P. Jałoszyński, 2004".

Description. Body small, slender, very convex, moderately dark brown, antennae slightly lighter, palpi and legs distinctly lighter than body; setation moderately long and sparse, suberect.

Male externally nearly identical to *L. sabahensis*, including setation and punctuation, it differs only in slightly smaller body, shorter antennae and proportions of elytra. Body length 2.31-2.45 mm (mean 2.38 mm), length of head 0.39-0.41 mm (mean 0.4 mm), width of head 0.55-0.57 mm (mean 0.56 mm), antenna only slightly longer than 0.8 of body length, as in Fig. 38, length 1.95-2.05 mm (mean 1.99 mm); length of pronotum 0.67-0.72 mm (mean 0.69 mm), maximum width of pronotum 0.55-0.57 mm (mean 0.56 mm), width of pronotum at base 0.4-0.42 mm (mean 0.41 mm), length of elytra 1.25-1.32 mm (mean 1.29 mm), width of elytra 0.85-0.95 mm (mean 0.88 mm), EI 1.39-1.47.

Aedeagus (Fig. 25-27) elongate, widest near base, narrowing toward rounded apex, length 0.49 mm. Base with moderately deep median emargination; parameres long, slender, exceeding apex of median lobe, broadened near apex, without setae; internal armature symmetrical, relatively darkly sclerotized, central complex composed of median capsule surrounded by subtriangular lateral structures and pair of elongate, nearly transverse sclerites in distal part of inner sac.

Female externally differs from male only in higher elytral index. Body length 2.33-2.55 mm (mean 2.41 mm), length of head 0.41-0.45 mm (mean 0.43 mm), width of head 0.56-0.57 mm (mean 0.565 mm), length of antenna 1.9-2.0 mm (mean



FIGS 30-38

Loebliotes sabahensis Franz (30-35, 37), *L. mastigicornis* Franz (36) and *L. minor* sp. n. (38): 30 – aedeagus of paratype, dorsal view, 31 – aedeagus, ventral view, 32 – aedeagus, lateral view, 33 – structures of inner sac, non-type male (variant), 34 – spermatheca, 35 – bursa copulatrix, ventral view, 36-38 – left antenna, dorsal view. Scale 0.2 mm for 30-32, 0.05 mm for 33-35, 0.5 mm for 36-38.

1.94 mm), length of pronotum 0.67-0.71 mm (mean 0.68 mm), maximum width of pronotum 0.55-0.56 mm (mean 0.55 mm), width of pronotum at base 0.41-0.42 mm (mean 0.41 mm), length of elytra 1.25-1.39 mm (mean 1.30 mm), width of elytra 0.87-0.92 mm (mean 0.89 mm), EI 1.44-1.51.

Spermatheca as in Fig. 28, length 0.062 mm. Bursa copulatrix (Fig. 29) missing or highly reduced to transparent, hymenous structures surrounding end of ductus spermathecae.

Comments. This species is the smallest *Loebliotes*, externally extremely similar to *L. sabahensis*. Examination of the aedeagus or spermatheca and bursa copulatrix is necessary for correct identification.

Etymology. The specific Latin epithet “*minor*” refers to the smallest body amongst all species of the genus.

DISCUSSION

Within the Cyrtoscydmini, *Loeblites* shows the highest degree of similarity to *Syndicus* and *Horaemorphus*. During the present study, the dorsal femoral groove was found in all members of this genus. This interesting character has been discovered very recently in *Syndicus* (Jałoszyński, 2004); all Asiatic species of the Cyrtoscydmini known to the author (including all described species of *Horaemorphus*, *Borneosabahia* Franz, *Parastenichnus* Franz, *Protoscydmus* Franz, *Parastenichnaphes* Franz, *Siamites* Franz, and many species of *Euconnus* Thomson, *Microscydmus* Saulcy & Croissandeau, *Neuraphes* Stevens, *Scydmoraphes* Reitter, and *Stenichnus* Thomson) have dorsal surface of femora without this structure. The general body shape of species belonging to *Syndicus* s. str. and *Loeblites* is very similar; on the other hand, the body shape (and some other characters) of *Syndicus* (*Semisyndicus*) is more similar to that of *Horaemorphus*. The very long and thin antenna with well separated antennomere XI in *Loeblites* can be used as an unambiguous key character to distinguish this genus from *Syndicus*, which has the antennomere XI tightly inserted into the apex of the antennomere X, without separating interspace (a unique character within the family). Also, the single subapical tooth instead of two teeth and the sharp, finely and irregularly serrated cutting edge of mandibles found in *Loeblites* is not known among representatives of *Syndicus* and *Horaemorphus* (however, details of mouthparts of *Horaemorphus* are known only in *H. sakishimanus* Jałoszyński). An undescribed species of *Horaemorphus* from Malaysia known to the author has the prostheca significantly shorter than that of *H. sakishimanus*, similar to the prostheca of *L. sabahensis*. Another unique feature of *Loeblites* is the long and slender median projection located in the posterior margin of the proctiger; this part of the female genital segment has broadly rounded posterior margin both in *Syndicus* and *Horaemorphus*. The bursa copulatrix uniquely shaped in two out of three known species of *Loeblites* seems to be extremely diversified within the genus, and it has not been found in *L. minor*. This character is also variable within *Horaemorphus* (Jałoszyński, in preparation). Wing venation in *Loeblites*, thought similar to that found in the both subgenera of *Syndicus*, clearly differs in longer subcosta fused distally with radius (very short in *Syndicus*); wings in the remaining genera of the tribe have not been illustrated or described.

Besides the general appearance and the presence of femoral grooves, members of *Loeblites* and *Syndicus* share the following features: the clypeus separated from the frons by a transverse groove; eyes with emarginated posterior or postero-ventral margin; antennal insertions located on latero-anterior margin of the head, widely separated; anterior tentorial foveae (overlooked in Jałoszyński, 2004, examined and confirmed during the present study in *S.* (s. str.) *difficilis* Jałoszyński and *S.* (*Semisyndicus*) *laei ranongianus* Jałoszyński) hidden in supraclypeal groove, hardly visible in dry-mounted specimens; occiput broad; mandible nearly planar, subtriangular; very similar maxilla (however, this structure seems to be little diversified within the tribe, Jałoszyński, unpublished observations); nearly identical design of palpi maxillare and

labiale; pronotum widest near anterior third, with narrow posterior collar separated by a row of ante-basal foveae; very similar details of mesosternum, metasternum, metanotum and mesonotum, the latter structure with characteristic long posterior notal processes; each elytron with two basal foveae connected by an U-shaped groove and in natural position partly hidden under the posterior margin of the pronotum; similar wing venation; shape of legs; male and female genital segments; the aedeagus; and the spermatheca. *Loeblites* is more similar to *Syndicus* s. str. in the body shape (in *Semisyndicus* the body shape is stouter and resembles that of *Horaemorphus*), uniformly concave basisternal area of the mesosternum (in *Semisyndicus* with unique median "isle", as illustrated in Jałoszyński, 2004, fig. 35D) and nearly straight base of elytra (strongly concave in *Semisyndicus*). In turn, *Loeblites* is more similar to *Semisyndicus* than to *Syndicus* s. str. in the shape of the posterior margin of the vertex, which bears a small median tubercle (not found in *Syndicus* s. str.); the aedeagus, which is especially similar between all *Loeblites* and *S. (Sem.) tenuicornis* Jałoszyński (Jałoszyński, 2004, fig. 42A-C); in turn the copulatory organ of the latter species resembles that of *Horaemorphus*. *Loeblites* also shares with *Semisyndicus* the shape of the spermatheca, which has approximate insertions of the ductus spermathecae and the accessory gland, which are widely separated in *Syndicus* s. str. Interestingly, in representatives of *Horaemorphus*, which have aedeagi similar to those of *Loeblites*, the spermatheca is distinctly different; it is also not similar to the spermatheca of *Syndicus* s. str. However, in one species of *Horaemorphus* (*H. nepalensis* Franz) the posterior margin of the vertex bears a very small median tubercle like that found in *Loeblites* and *Semisyndicus*, and the structures surrounding the opening of the ductus spermathecae inside the female genital segment are darkly sclerotized and relatively complicated (Jałoszyński, unpublished observations). Actual relationships between the three genera will be analyzed when important morphological details of *Horaemorphus* have been described. The existing data strongly suggest a separate position of *Loeblites*, *Syndicus* and *Horaemorphus* within the Cyrtoscydmini, a monophyly of this small group seems plausible.

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